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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/559,347	04/27/2000	Qixu David Chen	146712000400	2901

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EXAMINER

BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 03/05/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

AS-10

<b>Office Action Summary</b>	<b>Application No.</b> 09/559,347	<b>Applicant(s)</b> CHEN ET AL.	
	<b>Examiner</b> Kevin M Bernatz	<b>Art Unit</b> 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,3,5,6,8,9,11,12,14,15,17,18 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,3,5,6,8,9,11,12,14,15,17,18 and 21-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>9</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input checked="" type="checkbox"/> Other: <i>See Continuation Sheet</i> .              |

Continuation of Attachment(s) 6). Other: Excel sheet showing calculation of wt%s.

*for NiPX within Okumura et al. taught range.*

## **DETAILED ACTION**

### ***Response to Amendment***

1. Amendments to claims 1 – 5, 8 – 14 and 16 - 23, filed on January 24, 2002, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Continued Prosecution Application***

3. The request filed on December 17, 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) is acceptable and a CPA has been established. An action on the CPA follows.

### ***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18 and 21 - 23 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 20 of Chen et al. ('890) in view of Ross et al. (U.S. Patent No. 5,980,997).

Regarding claims 21 - 23, Chen et al. ('890) claim a longitudinal or perpendicular magnetic recording medium comprising in this order: a glass or glass-ceramic substrate comprising Li, a sealing layer comprising substantially amorphous material directly deposited on the glass or glass-ceramic substrate, and a magnetic layer; wherein the sealing layer has a thickness of about 450 Å or less and substantially prevents migration of Li from the substrate to the magnetic layer of the magnetic recording medium (claims 1 and 6). Chen et al. ('890) further disclose all the additional limitations in applicant's dependent claims 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17 and 18 (claims 2 – 5 and 10 – 20).

Chen et al. ('890) fail to claim using NiNb as the sealing layer, though Chen et al. ('890) does disclose that Nb can be added to the claimed sealing layer (claim 7).

However, Ross et al. ('997) teach that amorphous NiNb and NiP are art recognized equivalents in terms of underlayers directly deposited on glass or ceramic substrates (col. 2, lines 1 – 23 and lines 40 – 44; col. 3, lines 29 – 47; col. 7, lines 16 – 50; col. 8, lines 3 – 25; and claim 1). Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, NiP and NiNb are equivalents in the field of underlayers directly deposited on glass or glass-ceramic substrates. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152

USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Chen et al. ('890) to include a NiNb sealing layer as taught by Ross et al. ('997) since one of ordinary skill in the art would recognize that NiP and NiNb are known equivalents and the substitution of known equivalents performing identical functions is within the knowledge of one of ordinary skill in the art, especially given that Chen et al. ('890) discloses NiNbP as claimed subject matter (claim 7).

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 23 is rejected under 35 U.S.C. 112, first paragraph, as not being enabling because the claim(s) omit(s) matter disclosed to be essential to the invention as described in the specification or in other statements of record. *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). See also MPEP § 2164.08(c).

The sealing means comprising NiNb is critical or essential to the practice of the invention, but not included in the claim(s). While the examiner notes that claim 23 is written as an apparent "means plus function" claim, the addition of any non-nominal limitations prevents the use of "means plus function" language, resulting in a standard

claim subject to the requirements of U.S.C. 112 1<sup>st</sup> and 2<sup>nd</sup> Paragraph. In the instant case, the limitation on the thickness of the "sealing means" is a non-nominal limitation.

8. Claims 5, 6 and 14 – 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5, 6, 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the invention. Independent claims 22 and 23 require that the NiNb sealing layer be "directly deposited" on the glass or glass-ceramic substrate, yet claims 5, 6, 14 and 15 are directed towards embodiments where an adhesion enhancing layer is located between the NiNb layer and the substrate. Since the independent claim requires that the NiNb layer be deposited **directly** on the substrate, the additional limitation of the adhesion enhancing layer is indefinite, <sup>since</sup> the NiNb layer can't be both directly deposited on the substrate **and** deposited on the sealing layer (i.e. a dependent claim incorporates all the limitations of the independent claim that it depends from). For purposes of evaluating the prior art, the examiner has taken the position that the NiNb sealing layer is directly deposited on the adhesion enhancing layer in these embodiments.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the invention. Independent claim 22 limits the thickness of the sealing layer to 450 Å or less, yet claim 16 gives a range of 100 – 1000 Å. One of ordinary skill in the art would not be adequately apprised of the thickness covered by claim 16 since it is unclear whether the range of 450 – 1000 Å is

covered or not. For purposes of evaluating the prior art, this claim has been interpreted to read "about 100 Å to about 450 Å."

***Claim Rejections - 35 USC § 103***

9. Claims 2, 5, 6, 11, 14 – 16, 18 and 21 - 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross et al. ('997) and Starcke et al. (U.S. Patent No. 6,183,828 B1) in view of Taguchi et al. (U.S. Patent No. 5,874,376).

Regarding claims 21 - 23, Ross et al. disclose a longitudinal or perpendicular recording medium comprising, in this order: a glass or glass-ceramic substrate, a sealing layer comprising substantially amorphous NiNb directly deposited on the glass or glass-ceramic substrate, and a magnetic layer; wherein the sealing layer has a thickness of about 450 Å or less (col. 2, lines 11 – 15; col. 3, lines 29 – 44; col. 3, line 66 bridging col. 4, line 4; col. 6, lines 19 – 30; col. 7, lines 16 – 50; col. 8, lines 3 – 25 and lines 51 – 67; col. 9, lines 63 – 67; claims 1 and 4).

With regard to the limitation(s) "and substantially prevents migration of Li from the substrate to the magnetic layer of the magnetic recording medium", limitations that merely recite what a product will do rather than what they are have been held to be indefinite and/or provide little or no weight in determination of patentability over the prior art since these limitations are not further limiting in so far as the structure of the product is concerned (*Ex parte Slob*, 157 USPQ 172, 1968). However, even assuming the above limitation is given patentable weight as a "functional" limitation, it has been held that where claimed and prior art products are identical or substantially identical in



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structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily on inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prime facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily process the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433.

Therefore, in addition to the above disclosed limitations, the presently claimed functional property would have obviously been present because substantially identical sealing layers are disclosed in Ross et al. ('997) and it is known that NiP and NiNb sealing layers prevent the migration of alkali (e.g. Li) ions (Ross et al., '997, col. 3, lines 13 – 18; and Starcke et al., col. 2, lines 45 – 52; col. 3, lines 3 – 17; and col. 3, line 62 bridging col. 4, line 8), and there is no evidence of record showing that the disclosed prior art products do not necessarily possess the characteristics of the claimed product.

Ross et al. ('997) and Starcke et al. fail to disclose using a glass substrate comprising Li.

However, Taguchi et al. teach a glass substrate for magnetic recording media which can be easily formed, polished and chemically strengthened wherein the substrate comprises lithium (col. 2, lines 31 – 65; col. 4, line 37 bridging col. 5, line 17; col. 11, lines 27 – 38; and Examples).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Ross et al. ('997) and Starcke et al. to use a glass substrate comprising lithium as taught by Taguchi et al. in order to produce a glass substrate for magnetic recording media which can be easily formed, polished and chemically strengthened.

Regarding claims 2 and 11, Ross et al. ('997) disclose underlayers and protective coats (col. 6, lines 19 - 30) and Taguchi et al. disclose weight percent  $\text{Li}_2\text{O}$  meeting applicants' claimed limitation (Examples).

Regarding claims 5, 6, 14 and 15, Ross et al. ('997) disclose adhesion enhancing layers meeting applicants' claimed limitations (col. 3, lines 45 – 47; col. 7, lines 16 – 25; and Example 2).

Regarding claim 16, Ross et al. ('997) disclose sealing layers meeting applicants' claimed thickness range, as well as teaching that thinner layers are preferred and that thin layers can be formed by using NiNb since the laser power can be adjusted appropriately to control the bump heights (col. 8, lines 16 – 25 and lines 51 – 67).

Regarding claim 18, Ross et al. ('997) disclose sealing layer compositions meeting applicants' claimed limitations (col. 7, lines 16 – 24).

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10. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ross et al. ('997) and Starcke et al. in view of Taguchi et al. as applied above (hereafter referred to as RST), and further in view of Chen et al. (370).

RST disclose the claimed invention as described above.

RST fail to disclose oxidizing the surface of the sealing layer.

However, Chen et al. teach that oxidizing the surface of a NiP underlayer results in the formation of a magnetic recording medium exhibiting low noise and high coercivity (col. 2, lines 55 – 62; col. 3, line 51 bridging line 17).

Since NiP is an art recognized equivalent to NiNb (see above), it would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of RST to use a surface oxidized NiNb sealing layer as taught by Chen et al. in order to produce a magnetic recording medium exhibiting low noise and high coercivity.

11. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over RST as applied above, and further in view of Okumura et al. ('733).

RST disclose the claimed invention as described above.

While Ross et al. ('997) disclose that additional elements may be used in place of Nb, including elements meeting applicants' claimed limitations, RST fail to disclose a NiNb sealing layer further comprising a third element meeting applicants' claimed limitations.

However, Okumura et al. teach adding elements meeting applicants' claimed limitations, including NiNbP layers, in order to control the melting point and crystallization properties of the layer (col. 4, lines 7 – 20; col. 5, lines 1 – 11 and Table 1).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of RST to include additional elements meeting applicants' claimed limitations as taught by Okumura et al. in order to optimize the melting point and crystallization properties of the sealing layer.

12. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over RST as applied above, and further in view of applicants' admissions.

RST disclose the claimed invention as described above.

RST fail to disclose a CoCrPtTa magnetic layer, with or without a CrV underlayer.

However, applicants admit that CoCrPtTa magnetic layers with CrV underlayers are known in the art as conventional longitudinal media on glass substrates (page 4, lines 3 – 10).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of RST to use a CoCrPtTa magnetic layer, with or without a CrV underlayer as admitted by applicants depending on the desired cost and magnetic performance required.

***Response to Arguments***

**13. The rejection of claims 1 - 20 under 35 U.S.C § 103(a) – Takeuchi et al. in view of Ross et al. ('375)**

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hashimoto et al. (U.S. Patent No. 6,332,338 B1) teach Li and Na ion containing substrates (which teaches the equivalents of Na and Li ions, where Ross et al. ('997) explicitly mentions Na ions) as well as the importance of using an "alkali ion diffusion prevention treatment" to prevent the diffusion of alkali (e.g. Li, Na, etc.) ions from a glass or glass-ceramic substrate to the magnetic layer (col. 2, lines 53 – 65; col. 3, lines 26 – 35; col. 4, lines 13 – 27; col. 6, lines 5 – 30; col. 9, lines 33 – 40; and Examples). Ross et al. ('404) teach NiNb sealing layers directly deposited on a glass substrate wherein the thickness of the NiNb layer goes from 0 – 2000 Å (col. 4, lines 51 – 57 and Table 1).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone


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numbers for the organization where this application or proceeding is assigned are (703) 305-6078 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



KMB  
February 22, 2002



**STEVAN A. RESAN**  
**PRIMARY EXAMINER**

# Attachment to Paper # 10

## Weight Percents of example numbers 8 and 9 in Okumura et al.

MW (g/mol)	atom	mole fraction	weight assuming 1 mole (g)	weight fraction	weight %
58.71	Ni	0.77	45.21	0.81	80.7
30.97	P	0.17	5.26	0.09	9.4
92.91	Nb	0.06	5.57	0.10	9.9
		SUM =	56.05		

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## Weight Percents within the disclosed ranges given by Okumura et al.

MW (g/mol)	atom	mole fraction	weight assuming 1 mole (g)	weight fraction	weight %
58.71	Ni	0.63	36.99	0.57	56.8
30.97	P	0.1	3.10	0.05	4.8
92.91	Nb	0.27	25.09	0.38	38.5
		SUM =	65.17		